Wyoming's Uranium Resources

Summary Report

By Robert Gregory

Wyoming State Geological Survey

Thomas A. Drean, Director and State Geologist

www.wsgs.uwyo.edu

Editing and layout by Chamois Andersen

Introduction

Uranium is a highly valued natural resource that is used for nuclear power and electrical generation. Wyoming has the largest known uranium ore reserves in the United States. In the 1980s, the state's uranium mining industry was hit hard due to a drop in price, but today Wyoming is poised to make a comeback with 26 mining operations in the planning or permitting phase.

Wyoming leads the nation in uranium production at nearly 1.5 million pounds of yellowcake (U_3O_8) produced annually, followed by Nebraska and Texas, which produced 0.744 million lbs and .718 million lbs, respectively.

Currently, there are two active mining operations in Wyoming, the Smith Ranch-Highland operation (the largest production facility in the nation), owned by Power Resources, Inc., a subsidiary of Cameco, and the Willow Creek operation, owned by Uranium One, Inc. Both are located in the Powder River Basin.

Throughout the nation and world, an entire industry has been built around uranium mining, processing and utilization. The uranium mining industry in Wyoming has provided thousands of jobs over the years, and in 2011 more than $4.3 million dollars in taxes to state coffers.

Geologist J.D. Love in 1951 discovered uranium in Wyoming near Pumpkin Buttes in the Powder River Basin (Campbell County). Historically, uranium has also been mined in the Northern Black Hills (Crook County), the Gas Hills (Natrona and Fremont counties), the Little Mountain district (Big Horn County), Shirley Basin (Carbon County), and Crooks Gap district (Fremont County).

Economic Benefits to the State

Wyoming has greatly benefited from the uranium mining industry through an influx of jobs, tax revenues, and economic diversity. The uranium industry in Wyoming has provided thousands of jobs and nearly $150 million in tax revenue since the early 1950s.

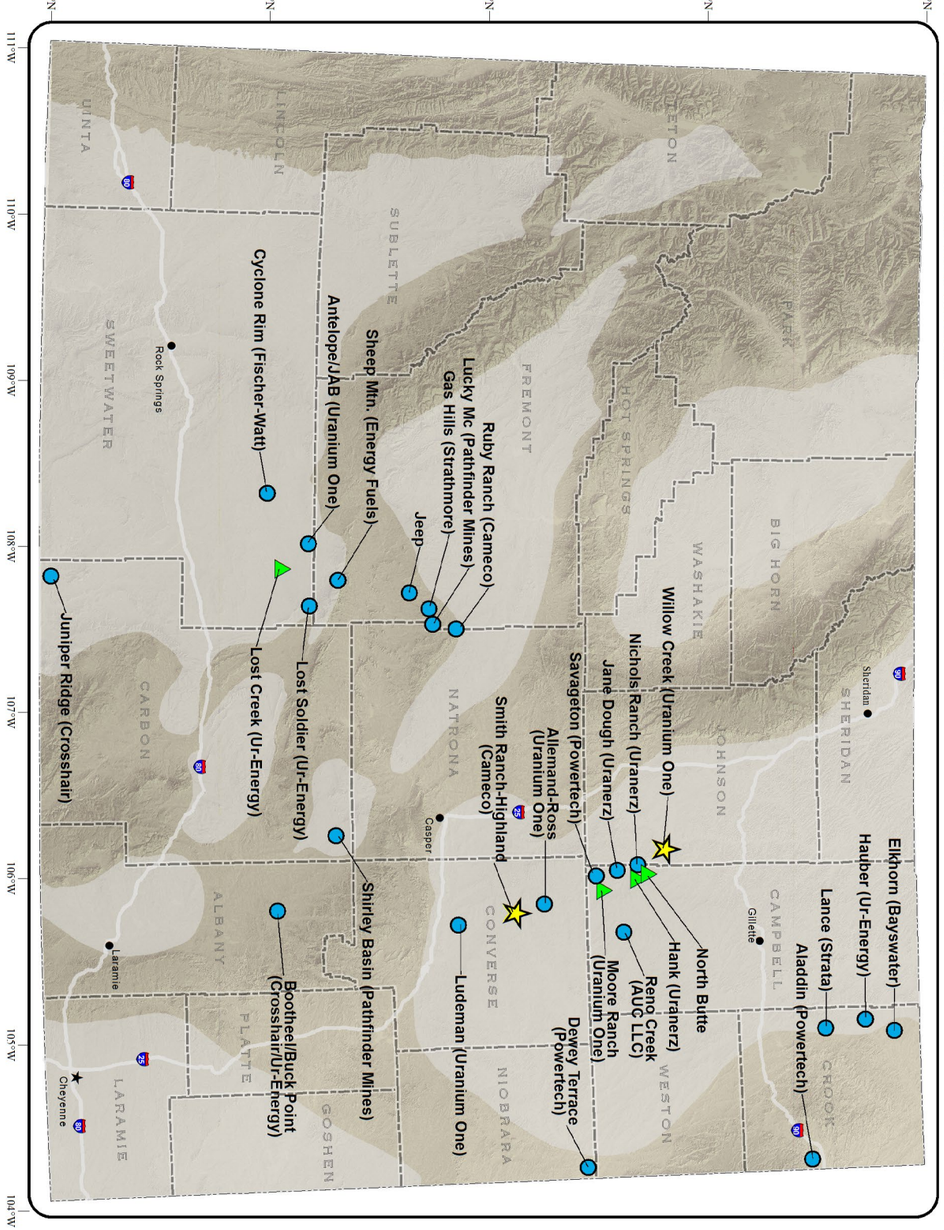
Wyoming Uranium Reserves

According to the U.S. Energy Information Administration, at the end of 2008 Wyoming's uranium reserves represented approximately 145 million pounds of yellowcake, assuming a price of $50 per pound. At $100 per pound, the reserve was 398 million pounds. The difference is due to the fact that higher yellowcake prices make lower grade ores profitable to recover.

Photos (from top down) courtesy of World Nuclear Association, R. V. Bailey, and Robert Gregory.

WYOMING STATE GEOLOGICAL SURVEY
Thomas A. Drean
Director and State Geologist
Laramie, Wyoming

Geology - Interpreting the past - Providing for the future



Map design and layout by Phyllis Ranz 1/2013

Uranium "reserves" is a designation of the amount of uranium in ore deposits that can be commercially produced (mined, processed, and sold) with current mining technology. Reserve estimates depend on such factors as the cost of mining and processing, the accessibility of the ore (depth to the ore and the properties of the host rock), ore grade, and the selling price of yellowcake.

U.S. and World Production

The United States has the fourth largest uranium resource in the world. Kazakhstan has the largest with Canada the second largest, and Australia the third.

The history of uranium mining in the U.S. goes back to the 1890s with the production of uranium-bearing ore and the mining of carnotite-bearing sandstones of the Colorado Plateau in Colorado and Utah. In the 1940s and early 1950s a uranium-mining boom occurred in the western U.S. This boom was the direct result of the post-Word War II nuclear arms race, and eventually from the development of nuclear power electrical generation in the U.S. and around the world.

During this boom period there were active mines in Wyoming, Arizona, Colorado, New Mexico, South Dakota, Texas, Utah and Washington. Today, Wyoming, Texas, and Nebraska all have active uranium mining operations.

The United States was the world's leading producer of uranium from 1953 until 1980, when U.S. annual production peaked at 16,810 metric tons. A decline in price, beginning in the late 1970s and continuing well into the 1980s, forced the closure of numerous U.S. mines and seriously impacted mining operations in Wyoming.

According to the World Nuclear Association, world production of uranium in 2011 was 54,610 metric tons, of which 1,660 or 3 percent was mined in the United States. Other countries that mine substantial amounts of uranium (in order) are Kazakhstan, Canada, Australia, Niger, Namibia, Russia, and Uzbekistan.

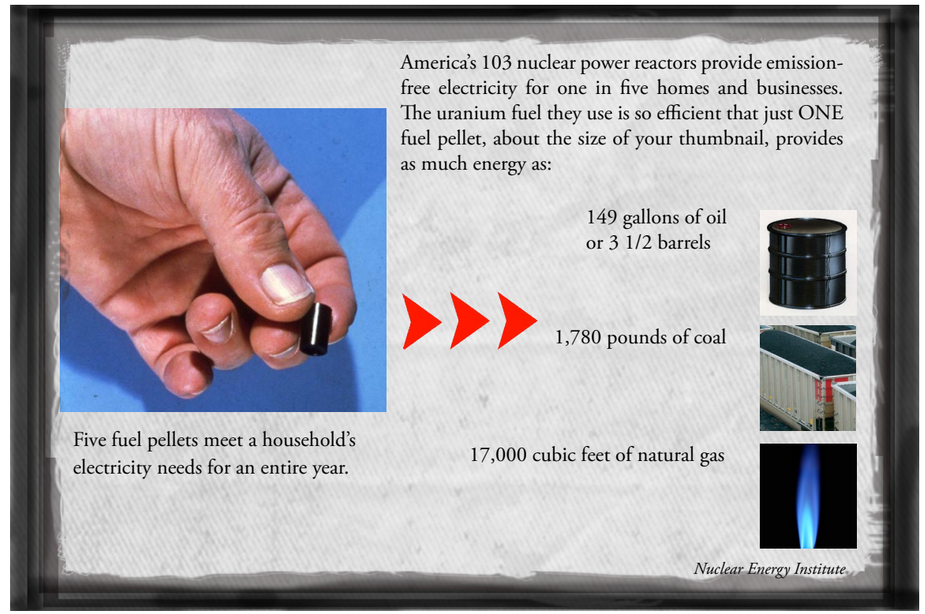
Uranium Uses

Today, uranium is mainly used for nuclear weapons and for providing energy for the generation of electricity. It was first recognized for its radioactive properties in 1866, but for many centuries it was used to color glass and also in early photography.

To date there are 103 nuclear power plants in operation in the United States, which leads the world in the output of commercial nuclear power. Elsewhere in the world there are 327 additional nuclear power plants in operation in 30 other countries.

A Commodity

U.S. uranium reserves are strongly dependent on price. This is because the majority of uranium ore in the United States comes from deposits in sandstone, which tend to be of lower grade than deposits mined in other countries such as Australia and Canada. When uranium prices drop, the U.S. lower grade uranium deposits tend to be less profitable, thus impacting recovery and production efforts. (Note: As of Jan. 31, 2013, the uranium spot price was $43.75 per pound.)

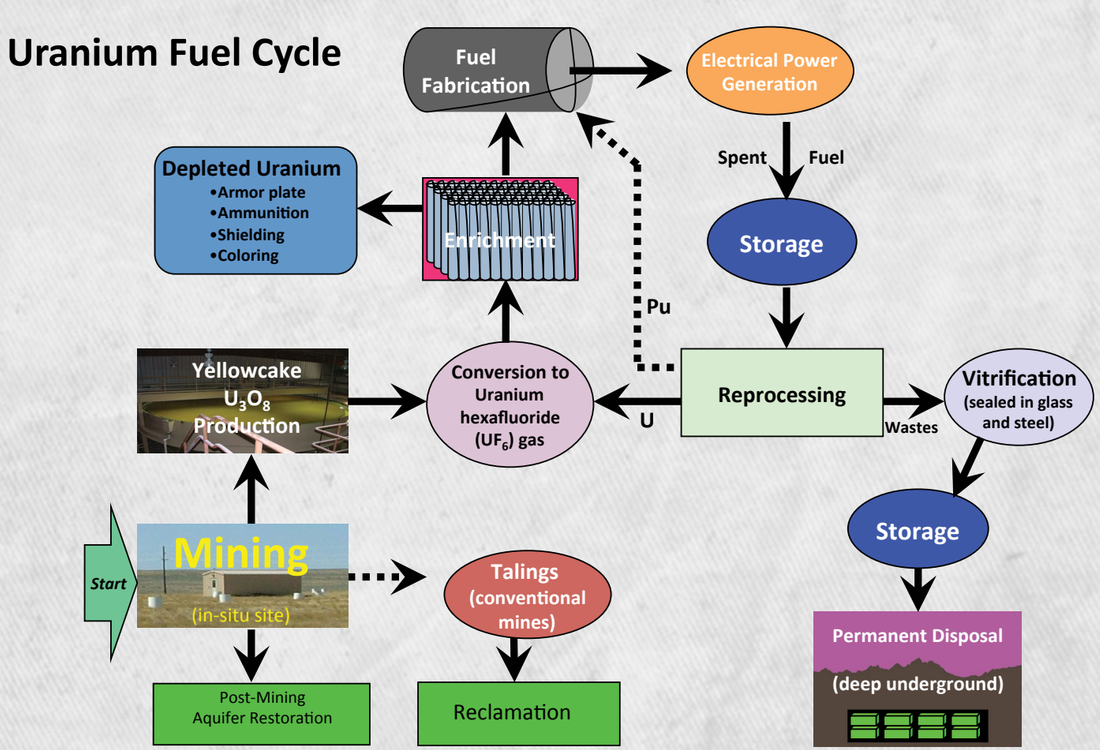


Wyoming Uranium Mining and Refining

Uranium mining involves the extraction of uranium-bearing ore from the Earth. It is obtained form uranium ore and sold as yellowcake. In Wyoming, uranium mining is done through in-situ recovery, which involves the extraction of uranium-bearing liquids.

Uranium occurs naturally in low concentrations in soil, rock, and water throughout the Earth, and is commercially extracted from uranium-bearing minerals such as uraninite.

When refined, uranium is a very hard, heavy, silvery white and radioactive metal, which is about 60 percent denser than lead and almost as dense as gold.



The Future of Wyoming Uranium Mining

Wyoming has the nation's largest number of proposed uranium projects. As of November 2011, the U.S. Nuclear Regulatory Commission had 24 licensing applications for the U.S., of which 16 were for Wyoming projects. There are another 16 mines currently in the planning phase. The state's uranium mines and proposed projects are located at several sites in the Powder River Basin, the Gas Hills in central Wyoming, as well as in the northeast part of the state, and the northeastern Great Divide Basin. Proposed uranium mines must go through state and federal permitting processes, which can take five to 10 years to complete.

Sources

Wyoming Mining Association
U.S. Energy Information Administration
Wyoming Department of Revenue
USEC, Inc.
Nuclear Energy Institute
World Nuclear Association

For additional information, click this QR code to access the WSGS uranium website.

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